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UNITED STATES DEPARTMENT OF AGRICULTURE
Food Distribution Administration
Fruit and Vegetable Branch

INSPECTION OF TOMATOES FOR CANNING AND PROCESSING

INTRODUCTION

(1) The U. S. Department of Agriculture in 1923 started a study of various raw products with the idea of establishing standards that could be used by the canning industry in contracting and purchasing raw products from the growers without discrimination. The canners had long realized that the system of paying a flat price per ton discriminated against the grower who produced a high quality product. This practice also tended to encourage low quality production rather than stimulate high quality production which was desired by all canners.

(2) From this standpoint this study was made with the general endorsement of the industry in various sections of the country. After a careful investigation of the methods of producing tomatoes and the requirements of the tomato canners, the Department in 1926 formulated U. S. Standards for Canning Tomatoes, which were revised in 1938. Soon after the promulgation of these standards, the industry started contracting and buying on the basis of the official grades. The use of these grades eliminated many of the controversies between the canners and growers and encouraged growers in general to improve their production methods in order to increase the percentage of U. S. No. 1 grade. The canners contracting with growers made a price differential between U. S. No. 1 and U. S. No. 2, and paid nothing for culls. Naturally the growers, who in the past had produced high quality tomatoes, were very much in favor of this system where they were actually paid a premium for high quality, while the grower who had produced low quality tried to improve his production methods in order to increase his percentage of U. S. No. 1. The canning industry soon realized that this system would do more to improve the quality than any other method that it had found in the past.

(3) Since these grades did not cover the requirements of the canners who were making tomato products such as soup, catsup, tomato juice, puree, chili sauce, etc. The Department in 1933 issued Standards for Tomatoes for Manufacture of Strained Tomato Products. Under these two sets of standards the inspection of tomatoes for canning and processing has continued to increase from year to year.

COMMON BASES OF PAYMENTS

(4) Before the promulgation of the official grades for Tomatoes for Canning and the inauguration of the Inspection Service, the various canners who contracted and bought tomatoes on a flat price

per ton or container basis made no price differential for the irregularity of various growers' loads. In other words, under this system, the grower with poor quality received the same price as did the producer of high quality. Naturally, the growers demanded that the canners discontinue this unjust method of payment. Other canners attempted to control the quality by a grading and dockage system which quite frequently varied from day to day and year to year depending on the supplies.

- (5) Canners who use the Inspection Service are now contracting and buying on the basis of grades. These contracts usually stipulate a certain price per ton for U. S. No. 1, another price per ton for U. S. No. 2, and nothing for culls. It is the duty of the inspector to determine the percent of the load that is U. S. No. 1 grade, U. S. No. 2 grade, and culls.
- (6) Canners frequently reserve the right by contract to reject all loads with more than a specified amount of culls and less than a specified percentage of No. 1.
- (7) It is to be remembered that the Inspection Service has no authority to reject these loads that do not meet the contract specifications. The duty of the inspector is to determine the percentages of the various grades, and issue a memorandum showing these facts. It is then optional with the canner to reject or accept the load, and inspectors should have nothing whatever to do with the rejections.

PRINTING OF INSPECTION MEMORANDUMS BY CANNERS

- (8) In order to reduce the number of forms to be filed and to simplify the records, quite a few of the large canners wish additional information, closely associated with the inspection memorandum, formerly called "certificate," shown on the same form as the inspection information. The memorandum is used by the canners as a permanent record in determining the price per ton to be paid the growers. From this standpoint it is desirable to show other information on the same form, such as weights, price per ton, etc. In cooperating with the canning industry the Washington Office has authorized canners, under certain conditions, to have forms printed including the memorandum portion. The memorandum portion of this form should be entirely separate from the other information. This can best be done by showing the other information below the line for the signature of the inspector.
- (9) The canners should always be advised before any forms are printed that a rough draft must be submitted to the Washington Office for approval. After the forms have been approved, it will be necessary for the canner to furnish the Washington Office with an affidavit from the printers showing the number of sets printed and serial numbers. The following form of affidavit written on the printer's letterhead will be satisfactory:

New York, N. Y.
April 1, 1939

John Doe Canning Co.,
1425 New York Street,
New York, N. Y.

Dear Sirs:

We hereby certify and affirm we have printed on Order C 301, April 1, 1939, for the John Doe Canning Co., New York, N. Y., 50,000 sets of form 737, Inspection Memorandums, Products Tomatoes, the first serial for 50,000 sets being A 13041, inclusive, and continued consecutively throughout the 50,000 sets, the last number being A 63040.

We further certify that the above statement is true and correct within our knowledge, and that we have not printed any other sets of the form 737 bearing any other number, serial, or otherwise.

Subscribed and sworn to this May 25, 1939.

Very truly yours,

John Doe Printing Co.,
John Doe,
General Manager

S E A L
John Doe
Notary Public

My Commission expires
Feb. 10, 1941

AGREEMENT BETWEEN CANNER AND INSPECTION SERVICE

The Inspection Service often encounters varying conditions at different canneries from year to year. These problems usually arise during the canning season, and sometimes lead to misunderstandings between the canners and the Inspection Service. Most of the cooperating agencies have learned from experience that a clear, concise written agreement between the agency and the canner before the season starts will eliminate most of these difficulties. (10)

Conditions will vary at different canneries in different localities depending on various factors, such as volume, weather and climatic conditions. However, the following points should generally be covered: (11)

1. The maximum number of hours inspectors shall work each day. (Exceptions may be made with the approval of the Supervising Inspector in cases of emergencies).
2. Fees and time of payment.
3. Equipment necessary and who shall furnish the equipment.
4. A definite agreement with reference to furnishing helpers, who are to work under the direction of the Inspection Service and replacement of helpers whose services are not satisfactory.

GENERAL INSTRUCTIONS TO INSPECTORS

(12) The inspector should study this circular as he will be expected to know these instructions. When in doubt on any matter that is not fully covered, he should get in touch with the Supervisor, who, as a general rule, can be reached by telephone. If it is necessary to take immediate action, he must use his best judgment, but advise the Supervisor of the action that was taken, so that he can take steps to correct the decision, providing correct policy has not been followed.

(13) Each inspector should study and become thoroughly familiar with the specifications of the U. S. Standards before attempting to make inspections and issue inspection memorandums. He should remember, however, that there are two separate sets of Standards, one for Tomatoes for Manufacture of Strained Tomato Products, and another for Canning Tomatoes. The former is intended to be used in the inspecting of fresh tomatoes that are to be manufactured into some tomato product, such as puree, juice, soup, catsup, pulp, chili sauce, etc., while the latter may be used in inspecting fresh tomatoes that are to be canned. However, the canner may contract on the basis of either set of standards regardless of the processed product, or insert other requirements not covered in the standards.

(14) These two sets of standards differ materially in certain respects so the inspector should be sure that he knows these differences. The most important differences in the U. S. No. 1 grades are as follows:

U.S. No. 1 Grade for Canning Tomatoes

1. Permits stems
2. Tomatoes must be firm
3. Tomatoes must be well formed.
4. Tomatoes must not be affected with mold or decay

U.S. No. 1 Grade for Manu- facture of Strained Tomato Products.

- Does not permit stems
- Tomatoes need be only fairly firm
- There are no shape requirements
- Tomatoes affected with molds or slight decay which can be

removed in ordinary process of
washing without hand trimming
permitted

5. Grade has optional ~~pro~~-No minimum size required
vision for minimum size

EQUIPMENT REQUIRED

1. Inspection memorandums.
2. Paring knife when inspecting on basis of grades for Man-
ufacture of Strained Tomato Products.
3. Partitioned grading table or other suitable table.
4. Three suitable metal containers.
5. 3 direct reading scales. (Should be checked continu-
ously and adjusted.)
6. Water bucket for washing hands.
7. Several towels for drying hands.
8. Slide rule or computation chart.
9. Sizing gauge when size specified in contract.

CONSTRUCTION OF GRADING TABLE

The construction of the grading table is generally handled
by the canner, who can obtain specifications from the Department
for building these tables. So from the standpoint of this circu-
lar, it will suffice to state that the table is constructed with
four compartments, in the upper center compartment the sample con-
tainers from the load are emptied, the inspector then sorts these
tomatoes according to grades; the number ones are placed in the
left compartment, the number twos in the lower center compartment,
the culls in the right compartment.

(15)

This table is constructed so that after the inspector has
graded the tomatoes, it can be tilted and the tomatoes of various
grades will fall in separate containers, and a reading of the weight
can be made from the scales.

(16)

SELECTION OF SAMPLES

In many cases the canners furnish helpers to lift the sam-
ple containers from the wagon or truck, empty the tomatoes on the
inspection table, and after they have been graded, refill the con-
tainers and set them back on the load. While these helpers are
expected to do the manual labor, the inspector will always be held
responsible for selecting representative samples. Each inspector

(17)

should remember that he and not the helper, is to sign the memorandum. Regardless of how competent the helper may be, the inspector MUST NOT allow the sampler to select samples from the load unless the inspector compares these containers with the remainder of the load. If in the inspector's opinion the samples are not representative, other samples should be selected which are representative of the load.

- (18) These helpers are employees of the canner, and naturally many growers get the impression that these men are working for the interests of their employers. In order to avoid unnecessary criticism by the growers, the inspector should let it be clearly seen that he is supervising the selection of samples. He should not hesitate to tell the helper to select other samples, or point out the containers that he desires taken.
- (19) If the inspector has reasons to believe that a load is "stacked," he should make every effort possible to get containers from all parts of the load. Frequently it is possible to take additional samples when the tomatoes are being unloaded. He should always avoid taking sample containers that are too easily accessible as these may have been placed there for that purpose.
- (20) REFUSE TO GRADE SAMPLES SELECTED BY OTHER PARTIES: In some cases growers will bring loads in after the inspection platform is closed, and the inspectors have gone for the day, and expect the canner employees to select samples to be graded the next day. The canner and growers should be advised that the Inspection Service cannot, under any circumstances, grade these samples the following day. The Inspection Service should refuse to grade these samples from the standpoint that the samples were not selected by the Inspection Service, or under the inspector's supervision, and that there might be a material change in the quality from standing over night. In such cases it is up to the canner and grower to adjust payment for these loads without inspection.
- (21) MINIMUM NUMBER OF SAMPLES: In selecting sample containers, three or more should be selected from loads having 50 or more packages, and 2 from loads having less than this number. Frequently, at the beginning or ending of the season growers deliver only a few packages and when the load has 10 or less packages it is permissible to make a composite sample taken from the top of one container and the bottom of another.
- (22) It must be remembered that these numbers are minimum and there is no objection to increasing the number of samples when the time will permit. In fact, the Supervising Inspector may set other minimums when the conditions justify increasing the number. Certainly irregular loads should not be inspected on the basis of the minimum number. It is well to remember that the policy of the Service is to do justice to all.

IRREGULARITY IN LOADS: At a number of places where tomatoes are inspected, they are unloaded at points which are at some distance from where samples are taken, and the inspections are made. The unloading of large truckload lots sometimes reveals a different quality in the bottom layers than was found by the inspector in accessible portions of the load. Some canning factory managers have requested the Inspection Service to place an inspector at the unloading point to send back for further sampling any lots which unloading has shown to be of different quality in the lower layers than in the portions accessible to sampling at the inspection platform. It is not believed proper for the Inspection Service to undertake this kind of additional service for the canner. While it is recognized that large truckloads may be "framed" by the grower, our inspection regulations require the applicant to make the lots on which inspection is requested available for thorough examination. The casual examination of the stock as it is being dumped rapidly from the containers cannot give an accurate idea of how the quality is running, and the Inspection Service should not assume the responsibility for ordering loads back to the inspection platform on the basis of general impressions of quality obtained by this type of examination. If facilities are not provided for adequate sampling of all layers, the canner must expect variations in quality in different parts of a load, and the responsibility of sending loads back for further examination should rest on the canner.

(23)

The Inspection Service should have a definite understanding with the canner to the effect that he may send back a load for re-grading if in the process of unloading it is shown that there is a material difference between the upper and lower portions of the load.

(24)

If a load is sent back to the inspection platform for the examination of portions not accessible for sampling at the time of the first inspection, the weighted average of the two inspections should be given for the load as a whole, and the first memorandum should be voided. If the portion of the load returned for resampling is to be weighed, it will not be necessary to average the result of the two inspections, and a new memorandum should be issued on this portion of the load, and treated as a new inspection without any reference to the first inspection. The number of containers shown on the first memorandum should be reduced to agree with the number unloaded before the second weighing.

(25)

Some canners have stipulated in their contracts with the growers that loads showing a material difference in quality of the tomatoes in the lower portion of the load from that in the upper portion may be re-weighed and sent back to the grading platform for a grading of the lower portion.

(26)

INCREASED SAMPLES BY REQUEST OF GROWER OR CANNER: In some cases the grower or canner may question the accuracy of the inspection owing to the irregularity of quality in the various containers.

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In most cases where the grower or canner questions the accuracy of a report, it is not the grade interpretation that is in question but the sampling. Regardless of how careful the inspector is in sampling loads, there will be an occasional load in which the samples will not accurately represent the quality of the load. From this standpoint it is necessary to admit the possibility of error in sampling loads of irregular quality.

- (28) When the grower or canner questions the accuracy of the sampling but does not question the grade interpretation of the inspector, it will be permissible for the same inspector to select additional samples for analysis. These samples should be inspected, and the results of the two inspections combined into a weighted average on a new memorandum. The first memorandum, if issued, should be voided.
- (29) APPEAL AND SECOND INSPECTIONS: If either the canner or grower questions the accuracy of an inspector's report because of grade interpretation, he may request an appeal inspection to verify his contention. Such a request usually cannot be granted at outlying plants or receiving stations where only one inspector is located unless a Keyman or Supervising Inspector happens to be in the immediate vicinity. If either one of the latter is not available, the inspector should endeavor to adjust the difficulty perhaps by taking additional samples and giving a detailed explanation of the reasons for his scoring. If a canner or grower is still not satisfied with the inspector's interpretation of grade factors, it is of course his privilege to notify the Supervising Inspector of this dissatisfaction and it then becomes the duty of the Supervisor to take such steps as he deems necessary to correct the situation. If an inspector is in doubt as to whether some of his grade interpretations are correct he should so notify his Supervisor and perhaps request an early check up of his grade interpretations.
- (30) At plants or receiving stations where a number of inspectors are working under the direction of a Supervisor or Keyman it is usually feasible to grant the request for an appeal inspection if the request is made within a reasonable time after the first inspection was made, and provided the load has not been out of the inspection yard. The Supervisor, Keyman, or some inspector designated by either of them should make the inspection and issue a regular memorandum showing the results with a statement written across the face: "Appeal inspection. This memorandum supersedes Memorandum No. ____".
- (31) Memorandums issued on an appeal inspection upon request of either a grower or canner should include only the results of the second examination. In other words, results of the appeal inspection should never be averaged with those obtained and reported on the first memorandum by the first inspector.

If a considerable period of time has elapsed since the first inspection was made, or the load has been out of the inspection yard, a second inspection should be treated as a new inspection and no reference should be made to the first memorandum. This procedure is necessary in the inspection of tomatoes for canning or processing, as tomatoes ripen very rapidly during the canning season, particularly during periods of hot weather. It is possible to have a load showing a certain percentage of culls owing to lack of color, and two hours later the same load may show considerably less than this percentage of culls. Very frequently growers will hold a load of tomatoes, that shows poor color, outside of the inspection yard for a few hours in order to increase the degree of color. Growers often regrade their load, either in the yard, or outside or they may take it home and regrade it there. All inspections of such loads must be treated as new inspections and the results cannot be considered as having any bearing on the credibility of the results reported on the first memorandum. (32)

Note: An appeal, or second inspection, should never be made of the tomatoes in the same containers as many tomatoes are cut, bruised or lose weight, particularly when considerable decay is present.

The number of samples to be examined in the case of an appeal or second inspection will depend upon the uniformity of the lot in question and the character of the defects. If the load shows considerable irregularity, double the usual number of samples should be taken. If the quality is relatively uniform in the different containers, and it is only a question of whether there is a difference in interpretation between the two inspections, it may be sufficient to examine the tomatoes in the same number of containers as in the first inspection. (33)

INSPECTION PROCEDURE

IMPORTANCE OF RAPID INSPECTION: It is absolutely necessary that the inspector work very rapidly at times in order to keep ahead of the canner. In order that factory operations or growers may not be unnecessarily delayed, the inspector should be on hand to make inspections whenever deliveries are made. When practical, definite hours should be established for receiving tomatoes for inspection. This time may have to be varied as the season advances. (34)

ADHERENCE TO CONTRACT SPECIFICATIONS: The Inspection Service should obtain a copy of the contract between the canner and grower from the cannery plant before inspection is started. Each inspector should read and study these specifications and become familiar with them before the grading is started. (35)

Quite frequently canners will deviate from their contract specification as to size or some other factor early in the season when the supply of tomatoes is limited. Some canners may even request the inspector to notify the growers of the deviation from (36)

the contract specifications. In no case should the inspector or Inspection Service assume the canner's responsibility of notifying the growers of the variation from or return to the contract. However, inspectors and the Inspection Service should always insist that the canner notify the central Inspection Office within the State in writing of any change from the contract, or a return to the contract specifications once it has been changed. The inspector should receive his instructions from the Supervising Inspector with reference to these changes. The Supervisor should instruct the inspector regarding the proper notation to be placed on the memorandum to cover any deviations from the grades.

(37) INSPECTION UNDER ARTIFICIAL LIGHT: In many of the cannery plants in order to handle the volume it is necessary to inspect tomatoes under artificial light. While the Department does not advocate inspection of tomatoes under artificial light, it has been necessary to authorize night inspection. In some cases night inspection should be discouraged, but it must be recognized that frequently it cannot be avoided. In these cases the Inspection Service should insist on the proper lighting facilities for both the grading table and the place where the loads are to be sampled. In circumstances of this kind the inspector should consult with the Supervising Inspector for the proper lighting facilities.

(38) Sunlight: The inspector should never attempt to grade tomatoes in the sun, the table should be kept in the shade as the true color cannot be distinguished when the sun is on the tomatoes.

(39) Wet Tomatoes: When tomatoes are wet, the color may have an entirely different appearance, so the inspector should pinch more wet tomatoes in determining color than under ordinary conditions.

INTERFERENCE WITH INSPECTOR'S WORK OR ABUSE OF INSPECTORS

(40) In all sections there are usually a few growers who attempt to intimidate or influence the inspectors by abusive language. In some cases the growers may even go so far as to transfer tomatoes from one compartment to another compartment of a higher grade. It is clearly understood that the Inspection Service has no control over these growers, but certainly an inspector does not have to work under these conditions. Whenever the grower becomes abusive or interferes with the inspector's work to such an extent that the inspector cannot reason with him, the inspector should refuse to grade the load, and so advise the grower and canner. It will then be up to the canner and the grower to adjust payment for this load without inspection, or make an agreement with the inspector with reference to grading this and future loads from that particular grower.

METHOD OF INSPECTION

When the sample containers have been selected, one should be emptied into the proper compartment on the grading table, after which the inspector can proceed immediately to segregate the tomatoes into the various grade compartments. He should sort the tomatoes as rapidly as possible. Hesitation on the part of the inspector in scoring individual tomatoes may create the impression among growers and canners that he is not experienced. It is better to place a tomato in the wrong compartment quickly than to turn it over and over in the hands while trying to arrive at its correct grade classification. If it is seen that a mistake has been made, the tomato should then be transferred immediately to the proper compartment.

(41)

Experience has demonstrated that it is good practice to first pick out those tomatoes that are distinctly No. 1, No. 2, or culls, and place them in the proper compartment, leaving all borderline specimens for the last. After most of the tomatoes have been segregated in this way, it will be less difficult to place the borderline specimens properly by comparison with those already graded. In following this method, it will appear that the inspector is working very rapidly at the time when the grower is most critical. This procedure usually causes the grower to gain confidence in the inspector, and eliminates many arguments. In the past most of the complaints have been made against slow inspectors, even though their work was above the average. An inspector can often gain the confidence of the grower by picking out No. 1 tomatoes for the first three or four handfuls that are graded.

(42)

GRADE INTERPRETATION

COLOR: Color is ordinarily the most important factor in determining the grade of tomatoes and the inspector must be able to distinguish between the shades of red color in segregating the tomatoes into the proper grades on the basis of color.

(43)

The definitions of well colored and fairly well colored are identical in both the U. S. Standards for Canning Tomatoes and the U. S. Standards for Tomatoes for Manufacture of Strained Tomato Products. U. S. No. 1 requires that the flesh of tomatoes must have 90 percent good red color and U. S. No. 2 must have two-thirds good red color. Although the color requirements of the grades are based on color of the flesh, it is impracticable to cut all tomatoes before determining their correct color classification. It is therefore necessary for the inspector to do most of the sorting on the basis of external color (color without removal of skin). External color is usually a correct indication of the color of the flesh but this is not always true. The flesh of some varieties may be lighter and others darker than indicated by external color. For example, the Rutgers variety commonly has a rather pale, yellowish-red color externally, even after the flesh has become a deep red color. On the other hand, the Santa Clara Canner variety grown in California, characteristically shows a brilliant red color externally before the tomatoes

(44)

have ripened sufficiently for the flesh to show good red color. Also, growing conditions frequently cause the internal color to be poorer or sometimes better than external color indicates.

- (45) When inspecting tomatoes according to the requirements of the U. S. Standards for Canning Tomatoes, inspectors should not use a knife to cut cross sections of doubtful tomatoes except on very rare occasions. In determining the grade of tomatoes after they have been canned, color is largely judged by the outside color of the peeled tomatoes, therefore the inspector should acquire the habit of judging outside color of the flesh of doubtful specimens by pinching or tearing back the skin in one or more places. Cutting of an occasional tomato in cross section might be justifiable in order to determine how far the red pigment next to the outer wall extends around the circumference of the tomato, or to determine whether a tomato that has been placed in the cull bin is definitely a Cull or a No. 2. In case the inspector encounters a new variety, or tomatoes from a district with which he is not familiar, the cutting of an occasional tomato in order to become acquainted with general characteristics as an aid to getting his sights set might also be justifiable. However, since the correct color classification should be determined by the outside color of the flesh of the peeled tomato there should be little necessity for inspectors digressing from the general rule of making their separations without the use of a knife.

- (46) When inspecting tomatoes on the basis of the U. S. Standards for Manufacture of Strained Tomato Products it is permissible to cut cross sections of some doubtful specimens, but it is not anticipated that it will be necessary to cut more than a few tomatoes in any one sample. In other words, an inspector should not work with a knife in one hand in order to cut every tomato that may be close to the borderline for color between U. S. No. 1 and U. S. No. 2 or between U. S. No. 2 and Cull. The inspector should regard cutting of borderline tomatoes as an aid to keeping his sights set and follow the general rule of using the knife only when necessary with the aim of holding the percentage of cut tomatoes to the absolute minimum.

- (47) In inspecting tomatoes constantly the inspector's eyes may become tired, and temporary color-blindness to a certain extent may result. Therefore, he should take advantage of every opportunity to rest the eyes by looking at some dark-colored object for a minute or two.

- (48) FIRMNESS: It should be noted that the No. 1 grade in the U. S. Standards for Canning Tomatoes uses the term "firm," which when defined means not soft, puffy, shriveled, or water-soaked. In this grade where the tomatoes are to be canned

whole it is natural to expect a tomato that will not break down in the can. There is no requirement on firmness in the No. 2 grade. However, if the tomato is soft enough to break down in the ordinary process of trimming and washing, thereby causing a loss of more than 20 percent, it should be classified as a cull from the standpoint of waste.

In the U. S. Standards for Tomatoes for Manufacture of Strained Tomato Products the No. 1 grade uses the term "fairly firm," which when defined means that the tomato is not water-soaked. In this grade firmness is not so important since the tomatoes are going into some manufactured product. The tomato might be soft, shriveled (provided it is not tough or rubbery), or puffy, and still meet the requirements of the No. 1 grade, provided it is not soft enough to break down in the ordinary process of washing with a loss of more than 10 percent. The No. 2 grade has no requirements as to firmness, and tomatoes can only be scored as culls from the standpoint of losing more than 20 percent in the washing process, provided they are not shriveled to the extent that they have become tough or rubbery.

(49)

STEMS: The U. S. Standards for Tomatoes for Manufacture of Strained Tomato Products do not permit stems in the No. 1 grade, whereas the U. S. Standards for Canning Tomatoes do allow stems in the No. 1 grade. Both sets of Standards have no requirements for stems in the No. 2 grade.

In case canners who are using the U. S. Standards for Tomatoes for Manufacture of Strained Tomato Products, wish to permit stems in the No. 1 grade, it can be handled by a statement preceding the No. 1 grade. Thus: "Except for stems, U. S. No. 1."

(50)

Inspectors should not pull stems from a few tomatoes and then pass them as U. S. No. 1. This procedure will not be tolerated in the Inspection Service. Certification under such circumstances is incorrect because the sample is better than the remainder of the lot.

(51)

DECAY: The U. S. Standards for Canning Tomatoes do not permit decay or mold in the No. 1 grade. The U. S. Standards for Tomatoes for Manufacture of Strained Tomato Products do permit molds or decay in the No. 1 grade, provided it can be washed out in the ordinary process of washing without hand trimming. The ordinary washing process will remove all soft decays and loose molds, but will not remove the hard, dry type molds associated with growth cracks, and the firm decays such as Anthracnose, Late Blight, Alternaria, Phoma, Macrosporium, Buckeye Rots, etc.

(52)

In the No. 2 grade in both sets of standards decay and mold is permitted, provided it can be removed in the ordinary process of hand trimming or washing without a greater loss than 20 percent.

(53)

OTHER FACTORS OF GRADE: All other factors of grade, such as sunburn, sunscald, growth cracks, worm injury, freezing, and mechanical injury are handled under the general definitions of damage

and serious damage. Many of the States that have cannery tomato inspection, have a supply of 10 and 20 per cent balance scales to be used by inspectors for checking their judgment on waste. Where these are not available inspectors can easily learn to estimate 10 and 20 percent waste by cutting tomatoes into halves and quarters, then finally cutting quarters to give approximately 1/5 and 1/10 portions.

- (54) As to the manner of making the cut to determine the percentage of waste, the inspector will need to consider the nature and location of the injury. As a general rule, he should be guided by good commercial practice in trimming. Such practices vary, however, in different factories depending upon policies and whether trimmers are supplied with straight or spoon knives. Therefore, in the interest of uniformity in the manner of cutting to determine the percentage of waste, ordinarily a straight cut should be used for removing injuries such as growth cracks and sunburn which affect all or practically all of the shoulder of the tomato. It is generally considered that if it is necessary to cut one-third of the tomato away at the stem end in order to remove such defects, it will just pass the U. S. No. 2 grade. Normal waste from core at the stem end and from the skin is from 10 to 15 percent. For removing injuries affecting smaller areas such as single growth cracks, spots of sunburn or sunscald on the shoulder or cheek of the tomato, or cat-faces, more or less of a cone-shaped cut should be made. Regardless of the type of cut made to determine the percentage of waste caused by various defects it is not expected that the inspector will carefully carve out only the defective portion of the tomato. At the same time he should guard against removal of an excessive portion of uninjured flesh along with the defect.

- (55) SUNBURN-SUNSCALD: In determining damage or serious damage by sunburn or sunscald, some attention must be given to the character and depth of the injury. The term "sunburn" is applied to yellowish or greenish-yellow areas, usually found on the shoulders of the tomatoes. Ordinarily the discoloration extends through the outer wall of the tomatoes. Under certain conditions, however, the discoloration is rather superficial and does not even penetrate through the outer wall. This thin type of sunburn was very prevalent throughout central Indiana and in some other areas in 1941. Naturally, if this thin type sunburn is carefully trimmed out the excess waste is less than when it extends through the outer wall and into the flesh of the tomato. However, referring to the definitions of damage and serious damage by this factor, it is stated that a tomato is damaged or seriously damaged when the injury cannot be removed in the ordinary process of trimming without a loss of more than 10 or 20 percent, respectively, in excess of that which would occur if the tomato were perfect. It has been observed.

however, that peelers usually trim away as much tomato when the sunburn is of the thin type as when it penetrates through the wall of the tomato. It is not economically practicable for peelers, who must work rapidly, to always trim sunburn in such a way as to remove the affected portions and no more. It hardly seems logical, however, to score equal areas of the two types on the same basis, therefore inspectors should allow a slightly greater area to be affected with the thin type of sunburn than for the type which penetrates through the wall into the flesh. As a guide in scoring sunburn, it will usually be found that when sunburn of the type, which penetrates the outer wall, does not extend more than $\frac{3}{4}$ inch to 1 inch from the stem scar, and not more than $\frac{1}{2}$ the circumference around the tomato, the excess waste will not exceed 10 percent and the tomato will just pass for No. 1. If the sunburn is a very thin superficial type, the $\frac{3}{4}$ to 1 inch area from the stem scar can usually be extended to not over $\frac{3}{4}$ of the circumference in order to pass No. 1 requirements.

In factories where tomatoes are pulped for making strained tomato products, there is usually not very much trimming of sunburned parts from affected tomatoes as most of the affected portions are eliminated by the cyclone machine. However, in the interest of uniformity, inspectors should use the same interpretation for scoring damage and serious damage by sunburn and sunscald regardless of whether the factory is buying on the basis of the U. S. Standards for Canning Tomatoes or the U. S. Standards for Manufacture of Strained Tomato Products, and regardless of whether affected parts are trimmed out or not trimmed out in the factory operations.

(56)

Sunscald usually affects the shoulder or the check of the tomato and generally to remove the affected portion requires more than 10 percent excess waste. Thus, the inspector usually has the problem of determining whether a tomato is a No. 2 or a Cull. If the injury occurs after the tomato has ripened, the affected area will show a darkened, soft, watery condition where the flesh has broken down and upon breaking the skin the contents easily leak out. Earlier injury may cause the affected area of the ripe tomato to become slightly sunken with a tough outer wall which presents a whitish or whitish-yellow appearance. In scoring both types it is a matter of estimating the percent of excess waste in order to remove the injury.

(57)

DISCOLORED GROWTH CRACKS: Badly discolored cracks which do not have mold or decay should be scored on the basis of waste when inspecting tomatoes on the basis of U. S. Standards for Manufacture of Strained Tomato Products. In other words, use the same interpretation as when inspecting on the basis of U. S. Standards for Canning Tomatoes.

(58)

WORMS AND WORM DAMAGE: In scoring tomatoes on the basis of the U. S. Standards for Manufacture of Strained Tomato Products all tomatoes with worms present, or with worm injury that has penetrated beneath the outer wall of the tomato to the extent that the injury

(59)

has severely affected the quality of the tomato for pulping, should be scored as culls. The scoring of tomatoes affected with worms and worm injury on the basis of the U. S. Standards for Canning Tomatoes is strictly on the basis of waste.

INSPECTION MEMORANDUM

- (60) CARE OF MEMORANDUMS: Inspectors should take necessary precautions to prevent blank memorandums from falling into hands of persons who have no right to use them. Each inspector shall be held responsible for the return of all unused memorandums to the Supervising Inspector or inspection office at the close of the season or deal.
- (61) Inspectors will receive specific instructions from the Supervising Inspector with reference to mailing the inspection copy of the memorandums. Some States desire these mailed daily, while others may make other arrangements.
- (62) CARE IN RECORDING: The memorandum must be easily legible. All data set down during the process of inspection should be complete, neat in appearance and clear. All computations should be checked carefully for errors. Inspectors will be held responsible for figures being legible on all copies of the memorandum. Remember that the original memorandum is sometimes lost, and then it becomes absolutely necessary to use the carbon copies.
- (63) CORRECT NUMBERS, NAME AND ADDRESS: Most of the canners furnish the growers with books of forms which are to be filled in by the growers on each load delivered. These forms give the name, address of grower, date, and number of packages on the individual load. The inspector will transpose this information from this form to the memorandum. No excuse will be accepted for failure to record this information correctly on the memorandum. The memorandums are numbered and may be padded in book form.
- (64) NAME OF PLACE, CANNER, GROWER, AND DATE: The name of the place where the inspection is made, name of canner and grower, time of inspection and date should be filled in on the memorandum just before starting the inspection, or immediately after the inspection is made. Where the canner has obtained authority from Washington to print a supply of inspection memorandums to be used in their inspections, it will not be necessary to write in the name of the canner as it appears on the face of the memorandum. If you are working on daylight saving time, show it on the memorandum by the abbreviation "D.S." following A. M. or P. M., except when it is used Nationally in which event it will not be necessary to show the abbreviation.
- (65) RECORDING WEIGHTS AND PERCENTAGES: The form outlined below shows that part of the memorandum on which the inspector records weights and percentages. After the tomatoes in each container have been weighed, the results should be recorded on the memorandum as illustrated below:

:	:	<u>WEIGHT LBS.</u>	:	<u>PERCENT</u>	:
:	U. S. No. 1 :	58	:	55	:
:	:	:	:	:	:
:	U. S. No. 2 :	43	:	40	:
:	:	:	:	:	:
:	CULLS :	5	:	5	:
:	:	:	:	:	:
:	TOTAL :	106	:	100	:

The recording of the weights on the memorandum should be in whole pounds, even though the scale may show a fractional part of a pound. The nearest whole pound should be used, except that when the amount of culls is $1\frac{1}{2}$ to 1 pound, it should be reported as one pound on the memorandum. When the amount of culls is less than $1\frac{1}{2}$ pound, it should be ignored and zero should be recorded on the memorandum under that column.

(66)

In computing percentages from the percentage chart or slide rule, always add or subtract from the No. 2 grade in order to make the percentage total 100. This point can best be illustrated by the following example:

(67)

:	:	:	:Nearest :	Percent to be :
:	:Pounds:	Actual :	whole :	reported on mem- :
:	:	<u>Percent:</u>	<u>percent</u> :	<u>orandum</u> :
:	:	:	:	:
:	U.S. No. 1 :	52 :	49.52 :	50. :
:	:	:	:	:
:	U.S. No. 2 :	49 :	46.67 :	47. :
:	:	:	:	:
:	CULLS :	4 :	3.81 :	4. :
:	:	:	:	:
:	TOTAL :	105 :	100.0% :	101% :
:	:	lbs.:	:	:

SIGNING OF INSPECTION MEMORANDUM: The inspector shall sign the memorandum with his full name, or the initials of his given name, and his last name in full. This warning is given because some new inspectors have been found to either initial or simply sign the last name to the memorandum. Legally either of these signatures would be worthless.

(68)

CORRECTING AND VOIDING INSPECTION MEMORANDUMS: If the corrections are not too conspicuous, minor mistakes which would not affect the credibility of the memorandum if presented in court may be

(69)

changed by crossing out the part in error, and inserting the correct information. No corrections should be made on any memorandum unless the inspector has all copies so that all may be corrected at the same time. Whenever an error has been discovered, and the inspector does not have all copies of the memorandum, a new memorandum should be issued upon which the following statement should be made:

"This memorandum supersedes memorandum No. which
is in error."

No attempt should be made to erase errors on memorandums. All corrections should be initialed to show the authority for the correction.

- (70) DISTRIBUTION OF MEMORANDUM COPIES: The distribution of the original memorandum and one copy will depend on the arrangements made by the party requesting the inspection. In most cases this party will be the canner, and in all probability will request that the inspector give the original and one copy to the grower, who will present these documents to the canner along with the load. The canner usually keeps the original and gives the copy to the grower for his files. The second carbon copy is retained by the inspection office for at least one year, or preferably two years, if feasible.



